



Physical Condition as a Contribution of Shooting Accuracy with Flick Drag Technique

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Abstract

The purpose of this study was to examine how much the contribution of grip strength, arm muscle power, flexibility togok, and eye and hand coordination to shooting accuracy with drag flick technique. This research uses correlational method. A total of 40 men's hockey players were selected as samples in this study. The data analysis technique used multiple regression and coefficient determination test (R²). It can be concluded that the grip strength variable, arm muscle power, togok flexibility, and eye and hand coordination have an effect on shooting accuracy with drag flick technique and produce significant contribution. Relationship with Flick Drag shot accuracy was power muscle arm with a result of 34.6%, then body flexibility of 20.5%, holding strength of 17.9%, and the least contribution of hand-eye coordination of 14.3%.

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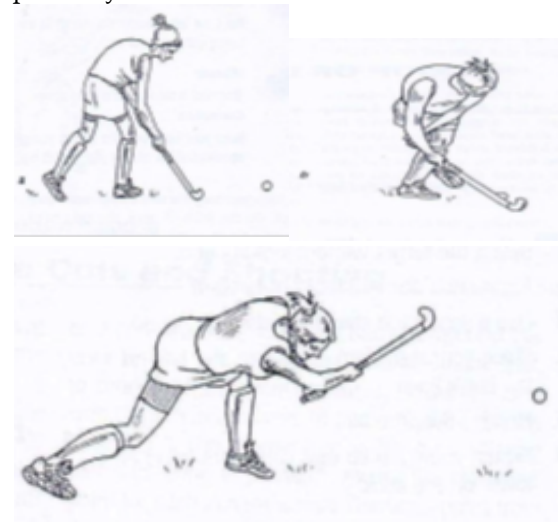
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INTRODUCTION

Exercise is an activity that has many benefits. Sport is not only aiming to be healthy but sports can also measure the achievement of a person or team. Like the sports hockey which is a sport that much in demand. This can be seen with the many holding of hockey cleric either local, national or international level. In a hockey sport every individual or team must outperform the other both technically and strategically to win the game. Increased technique should also be supported by the increase in physical condition (Bompa, 2018). Measurement of physical conditions is important in supporting the practice of a hockey player to achieve excellence in play. A focused hockey player there is a development of physical conditions as part of their preparation in play. Currently the measurement of physical condition becomes a guide for the coach as well as the hockey player itself to create a training schedule to support hockey players in mastering the technique of playing hockey.

A good hockey player must master the basic techniques of sports hockey one of them is shooting techniques. The shooting technique becomes one of the techniques in hockey sport that needs to be mastered properly because shooting is the decisive victory of a team. The more shots are generated the greater the team's chance to win. The shot in the hockey game is the Attacker's action trying to score by playing the ball into the goal of the inner circle. "The ball may miss the mark but it is still a" shot on goal "if the player's intention is to score with a shot towards the goal. (FIH, 2016). The attacking player must be able to put his shot in an accurate position or position that is difficult to reach by the goalkeeper. The quality of the resulting shot depends on how the physical condition is owned by each player. Good physical condition is needed by players to support the success of shooting. Each player has different physical conditions that will affect motor skills, techniques, tactics. The performance of a hockey player depends on the level of motor skills, techniques and tactics during the competition. (Septianto, 2016; Elferink-Gemser et al., 2004). Drag flick is one of the most commonly used shooting techniques in hockey games. Research conducted by (Rajinikumar, 2015) says that 59% of goals occur because of direct fire, 38% occurred because of penalty corner, and 2.5% occurred due to penalty stroke. Of the three, 34.5% of the techniques used in goal scoring are the drag flick technique. (Hussain, et al 2012) explains further in recent years, the penalty corner, especially with the advent and popular hit drag flick, has gained

an important part of the game as a scoring opportunity.



Picture 1 :Drag flick
(Anders, 1951)

The popularity of drag flick techniques became an innovation and became an important part of the team while attacking. Drag flick is an important technique, which makes the game more interesting. Drag flick is commonly used in the penalty corner, and is used as a variant to shoot. In addition to the above techniques are also required physical capabilities that support the results of shooting performance on the game hockey. Arm muscle strength, hand strength, flexibility of arms and leg strength are the physical components that support the game of Hockey (Nurhidayah et al., 2014; Lythe et al., 2011). In this tulisan, the author will reveal what factors are related, forming the accuracy of Drag flick and punch determination. This study also aims to find out how big the contribution of physical performance relationship to the accuracy of drag flick blows.

METHODS

The method in this research is correlational research. Correlational research is a study that aims to determine the relationship between two or more variables and to detect the extent to which variables on one factor relate to variations on one or more other factors based on correlation coefficient (Siswanto, 2013). This research is a correlation research, which want to investigate whether or not correlation between independent variables with dependent variable. The independent variables in this study are the holding power (X1), arm muscle power (X2) flexibility posture (X3), and hand eye coordination (X4), while the dependent variable is shooting accuracy with

drag flick (Y) technique.

Researchers used a sampling technique with cluster random sampling, where in this sampling the population is divided into several clusters or clusters. Randomly the necessary clusters are taken with the randomization process. Each of the different members in the randomly selected clusters is a necessary sample (Sudjana, 2002). In this study there are 4 research variables and researchers using random sampling technique. So the sample to be taken by researchers amounted to 40 players hockey in Central Java.

The instrument used to measure hand grip strength using handgrip dynamometer is a tool for measuring grip strength (Sri, 2009). To measure the arm muscle power is a medicine ball weighing 2 kg, with the validity of 0.77 and reliability 0.84 (Johnson, 1986). The instrument used to measure togok flexibility uses sit and reach test (Verducci, 1980). The instrument used for measuring hand eye coordination is a ball-throwing test (Maskum, 2007). The instrument used to determine the accuracy of the shot with the drag flick technique is using shooting test with the validity of 0.89 and the reliability of 0.94 (Puji, 2013)

Analytical techniques in this study using multiple regression analysis because the independent variable has more than two variables. Regression equation in this research is to know how big influence of independent variable or free that is handheld strength (X1), flexibility of strike (X2), eye coordination (X3) and power of arm muscle (X4), to shooting accuracy by Drag Flick Technique (Y). The mathematical formulas of the multiple regression used are:

To measure how far the whole independent variable can explain the dependent variable using the coefficient of determination (R²).

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$$

To measure how far the whole independent variable can explain the dependent variable using the coefficient of determination (R²).

RESULTS AND DISCUSSION

Based on the results of measurements of grip strength, arm muscle power, flexibility togok, hand eye coordination, and shooting accuracy by drag flick technique in Central Java in June 2017 through a survey with test techniques. In this research get the respondent counted 40 respondents, with characteristic for first variable that is holding strength biggest result is 52 kg, smallest result is 26 kg and result of power average equal to 37,38. The second variable is the largest arm muscle power yield is 560 cm, the smallest result is 250 cm, and the average 389 cm. The third variable is flexibility of togok largest

result is 23 cm, the smallest result is 0 cm, and the average value is 10.97. The fourth variable is the largest hand-eye coordination result is 18 times, the smallest result is 7 times, and the average value is 12 times the average value of throw is 12 times the throw. The fifth variable is the accuracy of the result of shooting with drag flick the greatest result is 19 points, the smallest result is 6 points, and the average value is 12 points. Here are the results of Multiple Regression Analysis shown in table 1 below :

Table 1. Results of Double Regression Hypothesis Test

Variable	Unstandardized Coefficients Beta
Constant	1,763
Gripping Power	0,064
Arm Powe	0,015
Body Flexibility	0,054
Eye and Hand Coordination	0,150

Source : Processed Data, 2017.

The regression equation is known :

$$\text{Shooting Results} = 1,763 + 0.0,0 \text{ KM} + 0.015 \text{ POL} + 0.054 \text{ FT} + 0.150 \text{ KOM} + e$$

The constant of 1.763 with positive parameters indicates that grasping power, arm muscle power, body flexibility, and hand eye coordination will improve shot accuracy by drag flick technique. Based on the above equation can be interpreted as follows:

1) Coefficient value of grip strength of 0.064. This implies that the variable holding power has a positive relationship with the result of shooting with drag flick technique which means that every increase of power holds one unit then the accuracy of firing with drag flick technique will increase by 0,064 with the assumption that the other independent variable from the regression model is fixed.

2) regression coefficient of arm muscle power equal to 0,015. This implies that the arm muscle power variable has a positive relationship with the results of shooting with drag flick technique which means any increase in arm muscle power of one unit then the accuracy of shooting with drag flick technique will rise by 0.015 with the assumption that other independent variables of the regression model is permanent.

3) The regression coefficient of posture flexibility is 0,054. This means that the variable flexibility of body has a positive relationship with the result of shooting with drag flick technique which means any increase of flexibility body one unit then the accuracy of firing with drag flick technique will rise by 0.054 with the assumption that other independent variables of the regression model is fixed.

4) Regression coefficient of hand eye coordination of 0.150. This implies that hand eye coordination variables have a positive relationship with the results of shooting with drag flick technique which means any increase of eye hand eye coordination then the accuracy of firing with drag flick technique will rise by 0.150 with the assumption that other independent variables of the regression model is permanent.

The following table 2 shows how much power the relationship with the accuracy of the drag flick technique shot

Table 2. R2 Test Determination

Equation	R	R Squared
Gripping Power	,423	,179
Arm Power	,589	,346
Body Flexibility	,453	,205
Eye and Hand Coordination	,378	,143

Source : Processed Data, 2017.

1) The Power of Grasping

The value of correlation relationship (R2) is 0,179. The effect of gripping force on firing accuracy with drag flick technique is equal to R value of 0.423 indicates that the proportion of contribution of power variable grips against shoot accuracy variable with drag flick technique of 17.9%. This means that the contribution of power gripping the shoot with drag flick technique contributes 17.9%.

2) Power Sleeve Muscles

The value of correlation relationship (R2) is 0.346. The effect of Powerotot lenganterhadap shooting with drag flick technique is equal to R value of 0.589 indicates that the proportion of variable contribution of arm muscle to shoot accuracy variable with drag flick technique of 34.6%. This means that the arm muscle power contribution to the accuracy of shooting with drag flick technique contributes 34.6%.

3) Flexibility of Strike

The value of correlation relationship (R2) is 0,205. Effect of togok flexibility on firing accuracy with drag flick technique is equal to R value of 0.453 indicates that the proportion of contribution of body flexibility variable to shoot accuracy variable with drag flick technique is 20.5%. This means that the contribution of body flexibility to shoot results with drag flick technique contributes 20.5%.

4) Speech Coordination

The value of correlation relationship (R2) is 0,143. The effect of hand eye coordination on shooting accuracy with drag flick technique is equal to R

value of 0.378 indicates that the proportion of contribution of hand eye coordination variable to shoot yield variable with drag flick technique is 14,3%. This means that hand eye coordination donation to the accuracy of shooting with drag flick technique contributes 14.3%.

Multiple regression analysis of grip strength measurement, arm muscle power, body flexibility, hand eye coordination have a positive relationship to shooting accuracy with drag flick technique. The biggest contribution in the accuracy of shooting with drag flick technique is the arm muscle power with the result of 34.6%, then the flexibility of togok is 20.5%, the holding power is 17.9%, and the least contribution is hand eye coordination of 14, 3%.

The arm muscle power is required to provide the strength and speed of the ball speed while performing the ball pushing motion. (Nurhidayah, 2014). Movement of the arm by the hockey player when firing using drag flick technique causes the ball to escape from the stick and slide toward the target. While the strength of the arm muscles when carrying the stick and pushing the ball will produce accurate shots if in pelaksanaannya accompanied by the speed. A hockey player with a good togok flexibility will easily make drag flick moves and produce the perfect movement, otherwise if the hockey player has the flexibility togok the less well will eat difficulty in doing drag flick movement. as it is said (Ibrahim, 2009) in his research concludes that the flexibility of body is an underlying ability of a person's motion. The low body flexibility causes rigid movement, thereby reducing flexibility and flexibility of movement, which is a critical determinant element in successful field hockey shooting. A hockey player who has high body flexibility has the ability to perform better skill moves, rather than players who have low body flexibility.

Body flexibility is required when the ball is released or loose, the stick is on the body of the stick, because when the ball is in the shape of the shot more quickly and accurately different if the ball feels at the end of the stick when it is released then the shot becomes weak and widened. (Mohd et al., 2014) states that after crossing the foot the player is forced to position his body as low as possible and advocate the stick as low as possible with the ground. In addition, in the movement to release the ball from the hip, chest, and shoulder sticks to rotate to produce the right target shot.

In addition, the strength of the grip is also influential to determine the direction of the ball, with a good grip then the stick will not be easily separated because if the stick is released during the shot then will change the position of the stick face and will change the target of the targeted shot. Verma (2014) in his research reveals that holding power helps

players defend angles.

Coordinate when doing drag flick technique is on the accuracy of placement of the ball on the body of the stick so that the ball can be pushed to the maximum then gouged and placement of the shot to enter the goal in accordance with the desired target. The eye receives the first stimulus of the brain to do the motion and then the hand gives an answer in the form of the movement. Both of these tasks must be done jointly.

Seeing the usefulness of drag flick is important for any hockey player to master this technique and can be applied during the competition. Physical condition factors are needed to support success in performing this technique. In addition technical factors become supporters in doing drag flick. Increased exercise especially for body parts used to perform drag flick techniques need to be done by players and coaches to assist players in supporting success in training and in competitions that will impact on improving hockey achievement.

CONCLUSION

The conclusions in this research are (1) There is a positive relationship between grasping power to the accuracy of shooting with drag flick technique which means the stronger grip the stick the accuracy of the shot more accurate. Contribution of power variables grasping to shoot yield variable with drag flick technique equal to 17,9%. (2) There is a positive relationship between arm muscle power to shooting accuracy with drag flick technique which means bigger arm muscle power then accuracy of fire more accurate. Contribution of variables of arm muscle power to shoot yield variables with drag flick technique of 34.6%. (3) There is a positive correlation between togok flexibility to shooting accuracy with drag flick technique which means better body flexibility then accurately more accurate shot accuracy. Contribution of variable body flexibility to variable result of firing with drag flick technique equal to 20,5%. (4) There is a positive relationship between hand eye coordination to the accuracy of shooting with drag flick technique which means the better hand eye coordination then the more accurate the shots. The contribution of hand eye coordination variable to shoot yield variable with drag flick technique is 14,3%.

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